

XII.—*Excavations on the site of the Roman city at Silchester, Hants, in 1900.* By
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HOPE, *Esq., M.A. With Notes on the Plant-Remains of Roman Sil-*
chester. By CLEMENT REID, *Esq., F.R.S.*

Read 23rd May, 1901.

WE have the honour of submitting on behalf of the Executive Committee a report of the operations carried out by the Silchester Excavation Fund in 1900.

The work was begun on the 4th May under the direction of Mr. Frederick Davis, whose death in July last has deprived the Committee of valuable services freely given and intelligently performed. The further conduct of the work was undertaken by Mr. Mill Stephenson and Mr. Hope, and the closing operations, which were prolonged until 4th December, were also directed by Mr. Stephenson.

The field of last year's excavations was in the extreme north of the town, lying between the *insula* first dealt with in 1890 and the north gate, and westward of the ground explored in 1899. The area included four *insulæ*, and covered, with the intervening streets, about 8 acres. It will be seen on referring to the general plan what an important addition last year's work has made to the excavated portion of the town.

The first *insula* dealt with, XXIII., belongs to a line of four unusually large squares forming the central division of the town. It was almost exactly 394 feet square, and was bounded by streets on all sides.

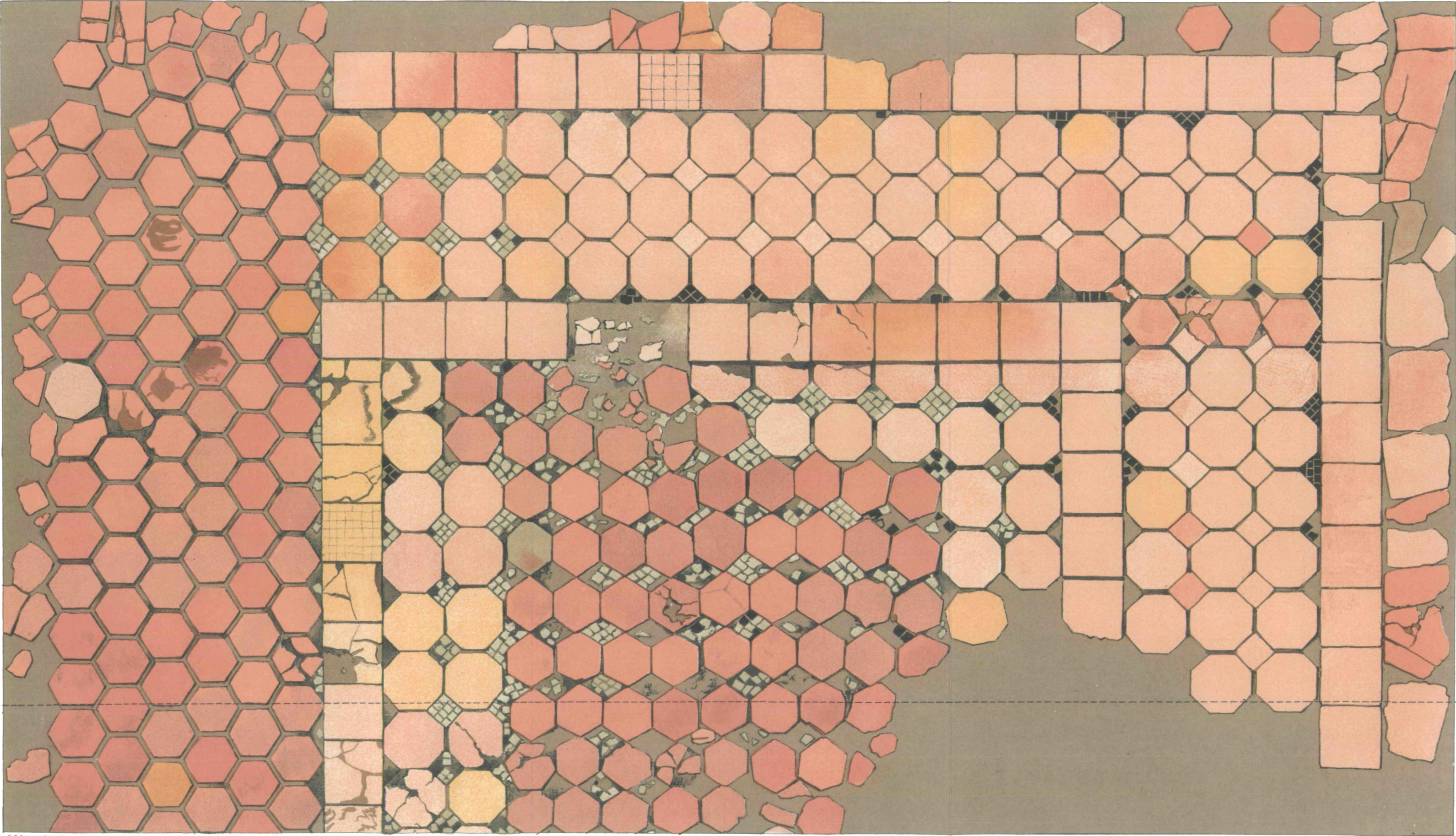
Despite the large size of *Insula* XXIII. it contained only two buildings of importance, and in its southern half, but there were more or less definite traces of a number of small structures towards the north. The southern half showed traces of walling along the streets, but these ceased in the upper portion, and the line of the street traversing it there was somewhat indefinite. The south-west

corner was occupied by the large house, No. 1, uncovered by the late Rev. J. G. Joyce in 1865, and described by him in *Archaeologia*, where a plan of it is given on a large scale.^a The house was one of the courtyard type, with the main chambers arranged on the north and east sides, the southern side consisting of a single corridor and entrance vestibule towards the street. The courtyard was entered from the west, but the chief entrance to the house was through the vestibule at the south-west angle. The house was re-examined to a considerable extent last year in the hope of clearing up several points left doubtful by Mr. Joyce, and the results are shown on our plan (Plate XXX.).^b It will be seen that one result was the discovery of an added block attached to the north-east corner of the building. This had escaped Mr. Joyce's notice.

One marked feature of this house is the number of mosaic floors that it contained, although they were for the most part of a simple character and without pattern. Room No. 12 had a central panel of finer character, and possibly there were others in the two heated chambers (20 and 21) on the west side of the house. The pavements of the main corridors varied curiously in colour: the northern being of buff stone *tesserae*, the eastern of coarse red *tesserae*, and the southern of longitudinal strips of drab, red, and black. But what renders the house of special interest is the pavement of the entrance vestibule (1) (Plate XXVII. and fig. 1); not on account of any beauty in itself, but because it is an almost unique specimen of Roman tile paving in this country combining the two systems of mosaic work, *opus tessellatum* and *opus sectile*. It is doubtful whether any other example has been found in this country elsewhere than at Silchester. Other specimens may, however, have existed on the site, as from time to time octagonal, hexagonal, and diamond shaped tiles have turned up. Tiles cut to geometrical forms are clearly meant to imitate similar pieces of marble, etc., used in floors of geometrical design in other parts of the Roman Empire, examples of which are fairly common in Pompeii. It is also possible that this rude imitation of a pavement of *opus sectile* was not sufficiently attractive to be largely used, and so its rarity in Britain may be accounted for. It is interesting as being the prototype

^a Vol. xl. 407-412 and Plate xxiv.

^b The following are the dimensions, in feet, of the various parts of the house as numbered on the plan: (1) $15\frac{3}{4}$ by 15; (2) 56 by $9\frac{1}{4}$; (3) $83\frac{1}{4}$ by $8\frac{1}{4}$; (4) 56 by $8\frac{1}{2}$; (5) $18\frac{3}{4}$ by 19; (6) $18\frac{3}{4}$ by $26\frac{1}{4}$; (7) $18\frac{3}{4}$ by $34\frac{1}{2}$; (8) 70 by $8\frac{3}{4}$; (9) $17\frac{1}{4}$ by $11\frac{1}{4}$; (10) 14 by 14; (11) $5\frac{3}{4}$ by 17; (12) $16\frac{3}{4}$ by 17; (13) 11 to $12\frac{3}{4}$ by 17; (14) $11\frac{1}{4}$ by 10; (15) $10\frac{1}{4}$ by $5\frac{3}{4}$; (16) $13\frac{1}{2}$ by $8\frac{1}{2}$; (17) $6\frac{3}{4}$ by $8\frac{1}{2}$; (18) $13\frac{1}{4}$ by $8\frac{1}{2}$; (19) 32 by $8\frac{1}{4}$ and 6; (20) $18\frac{1}{2}$ by 20; (21) $15\frac{1}{2}$ by 20; (22) $8\frac{1}{2}$ by $31\frac{3}{4}$; (23) 41 by 29; (24) $6\frac{1}{2}$ by $8\frac{1}{4}$; (25) $3\frac{1}{4}$ by $8\frac{1}{4}$; (26) 14 by $8\frac{1}{4}$; (27) $8\frac{1}{4}$ by $8\frac{1}{4}$.



C. F. KELL & SON, CHROMO-LITH

SILCHESTER.- PART OF A MOSAIC PAVEMENT OF TILES AND TESSERÆ IN HOUSE N^o I. INSULA XXIII. ($\frac{1}{12}$ LINEAR)

Engraved by the Society of Antiquaries of London, 1901.

of the tile pavements so common in medieval times, formed in much the same fashion, but with the omission of the tessellated work.

The example under notice appears to have begun at the south-west corner by laying down along the south side a triple row of octagonal tiles, with small diamonds in the interspaces, and a border of large square tiles next the walls, with the intervals between them and the octagons filled with black *tesseræ*. This was continued round to the east side and partly along the north. Within the broad border thus in progress a square panel was also begun, outlined by a band

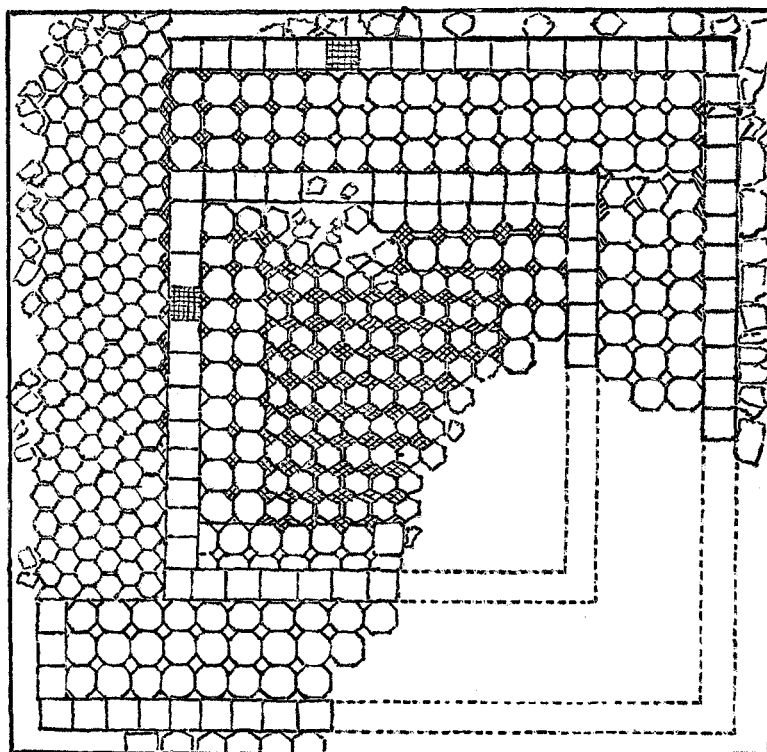


Fig. 1. Diagram of mosaic pavement in House No. 1. *Insula* XXIII.

of square tiles.^a This was to have been filled up with octagons like those in the border, but with the interspaces filled with drab *tesseræ*. But the progress of border and panel seems to have been arrested by the giving out, first of the small diamonds in the border, for which drab *tesseræ* were substituted, and secondly of the octagons. The pavement was accordingly completed by the next material

^a Two of the tiles in the square tile borders have been roughly scored into squares, probably for some game, since the scoring is too slight to help in the subdivision of the tiles for making coarse *tesseræ*.

available, small hexagonal tiles. In the panel these are arranged in rows with interspaces filled, according to the original design, with drab *tesserae*, but in the border the unfinished west side was filled with like hexagons loosely fitted together honeycomb fashion. This curious way of completing the design as originally planned is emphasised by a marked difference between the colour of the tiles first laid down and that of the intruded hexagons. This is probably accidental, but it is also possible that as regards the panel the darker coloured hexagons were introduced intentionally, in accordance with the known preference of the Romans for variety of colour in their pavements.

The western wall of the house just described extends northwards for 112 feet in a fragmentary condition, and then seems to have turned inwards in an oblique direction for 60 feet. It then again turned north, but its gravel foundations are hereabouts merged in a wide layer of the same material, and cannot be further distinguished. There does not appear to have been any wall in continuation of the south wall of the house, but at a distance of 63 feet from the south-east angle of the *insula* we found the base of a wall which turned the corner and extended northwards for 109 feet to the entrance of House No. 2, beyond which the wall apparently again continued for at least 70 or 80 feet.

House No. 2 was of the courtyard type, and was one of those that stood irregularly placed with respect to the lines of the streets (Plate XXX.). It was entered by a vestibule (1) facing east, with a porter's lodge (2) on the left, and possibly a larger chamber (3) on the right. The vestibule opened into a corridor (4) paved with red *tesserae*, with a set of chambers (5-8) to the south of it, which included possibly a kitchen (6 and 7) and a latrine (8) beyond. This group, with the space marked (12) and the corridor (9)^a seem to have formed the east wing of the house. The transverse or north corridor (10) had a pavement of drab *tesserae* with red borders, and was backed by a series of chambers (13-17). Of the largest of these nothing can be said, except that it was probably subdivided by lath and plaster partitions. Room No. 14 was one of the chief rooms of the house, and had a mosaic floor with a geometrical centre of black and white fret and knot work, inclosed by a vandyked border of coarser red and drab *tesserae*, all set in a red ground. The fine central panel has unfortunately been much injured, owing to the white *tesserae* of which it was largely composed being of ordinary chalk, and consequently of a perishable nature. The next chamber (15) had a floor of longitudinal stripes of coarse red and drab mosaic, and must have served as an ante-chamber to the room north of it (16), which was warmed by a pillared hypocaust. Of the next chamber (17)

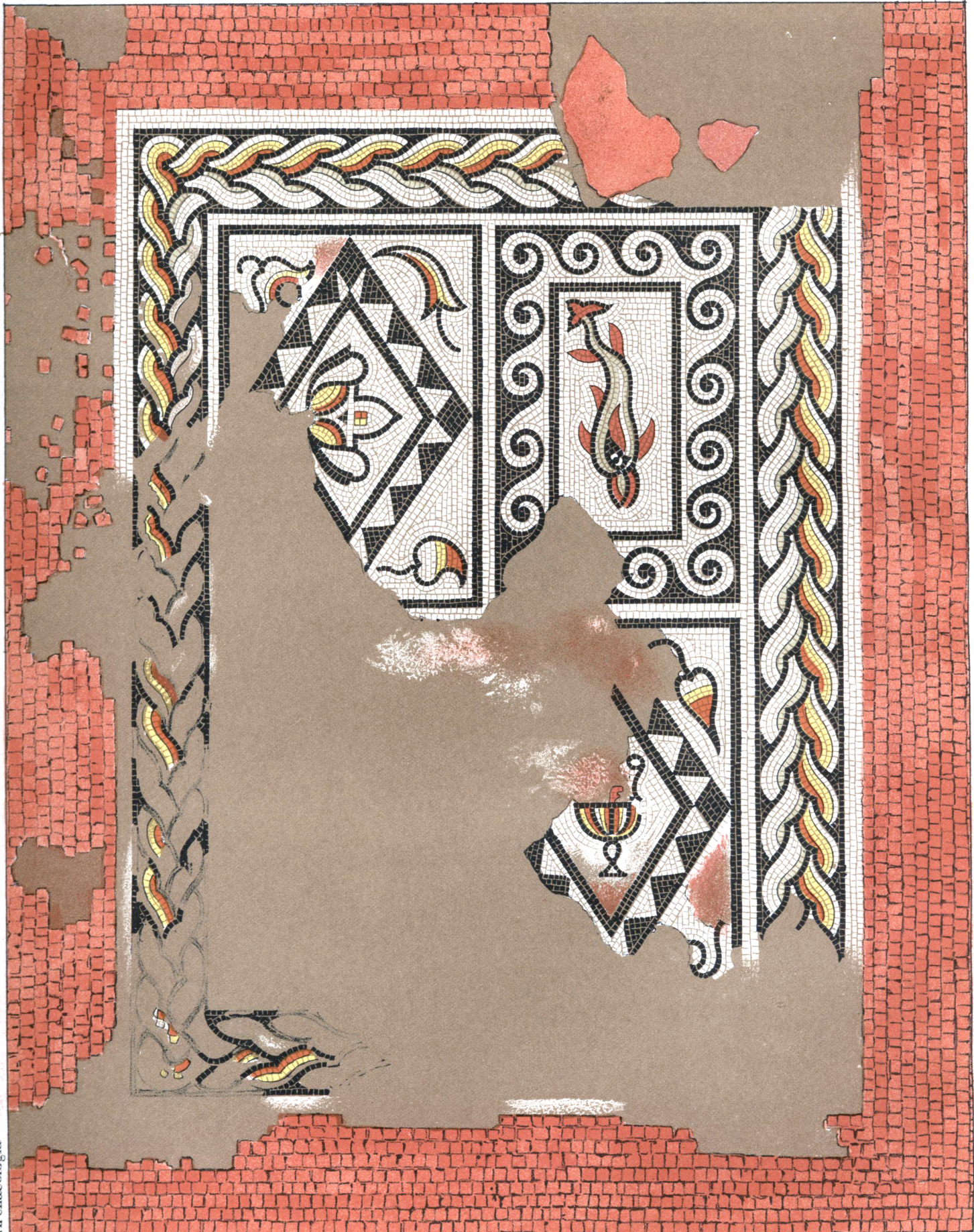
^a This corridor was also paved with red *tesserae*.

nothing can be said. The western corridor (11) was floored throughout with red *tesserae*, and was also backed by a range of chambers. Towards its southern extremity a row of tiles, extending somewhat obliquely across from wall to wall, has been laid upon the pavement, but its purpose is not evident. Just beyond this the corridor terminated in a small oblong chamber (18) with a pillared hypocaust^a under its eastern end only. The room had a floor of red mosaic, with a panel of finer work set in the portion clear of the hypocaust. (Plate XXVIII.) The panel had a border of braidwork, with a white ground divided into four compartments. The first of these had been completely destroyed. The second had a floral device; in the third was a vase; and in the fourth a dolphin. The ground, as in the case of the panel in Room No. 14, had been composed of the same soft white chalk, which had almost entirely perished. The large room (19) at the southern end of the western range was entered from the corridor, and had a floor of which only the margin, of red *tesserae*, remained, and not improbably in the centre was a panel of finer mosaic. The narrow chamber (20) adjoining on the north had also a floor of red *tesserae*, but no doorway from the corridor. The large square room (21) which comes next had likewise no doorway from the corridor. It was paved with a mixture of red and drab *tesserae*, but in the north-west corner the mosaic had been replaced by a mass of tiling, $5\frac{1}{2}$ feet square, which bore strong traces of fire. Next to this room was a narrow passage (22) paved with the same mixed *tesserae*. It had a doorway on the east, and served as the communication through the range. It opened westwards into an outer corridor (23). This had at its south end a chamber (24) of irregular plan, with what may have been a latrine (25) on its west side. The opposite end of the corridor contained the stokehole of a composite hypocaust underlying the large apartment (26) which formed the northern end of the range. As will be seen from the plan, this winter room attained its somewhat unusual dimensions at the expense of an older arrangement, consisting of a smaller room with an extension of the corridor on the west, and a narrow strip on the north which may have contained a stair to an upper floor.^b

It has already been noted that House No. 2 is irregularly placed with regard to the lines of the streets. It is also evident from this irregular plan of the

^a The furnace opening of this was on the north.

^b The following are the dimensions, in feet, of the various parts of the house as numbered on the plan: (1) (2) and (3) together, 27 by 21, of which (2) is $9\frac{1}{4}$ by $4\frac{1}{4}$; (4) $31\frac{1}{2}$ by 9; (5) $15\frac{3}{4}$ by 19; (6) $9\frac{1}{2}$ by 11; (7) $9\frac{1}{2}$ by $5\frac{1}{2}$; (8) 9 by $2\frac{3}{4}$; (9) 38 by 9; (10) 81 by 9; (11) 61 by 9; (12) $17\frac{3}{4}$ by 33; (13) $47\frac{1}{2}$ by $19\frac{3}{4}$; (14) $14\frac{1}{4}$ by 19; (15) $12\frac{1}{4}$ by $6\frac{1}{2}$; (16) $12\frac{1}{4}$ by $11\frac{1}{4}$; (17) $13\frac{1}{4}$ by 19; (18) $14\frac{1}{2}$ by $11\frac{3}{4}$; (19) $19\frac{1}{2}$ by 22; (20) 20 by 6; (21) 20 by $16\frac{1}{2}$; (22) 20 by $5\frac{1}{2}$; (23) 9 by 32; (24) 11 by 22; (25) 3 and $3\frac{1}{2}$ by $11\frac{1}{2}$; (26) $36\frac{3}{4}$ by 29.



SILCHESTER.— MOSAIC PAVEMENT IN HOUSE N^o 2, INSULA XXIII. ($\frac{1}{2}$ LINEAR)

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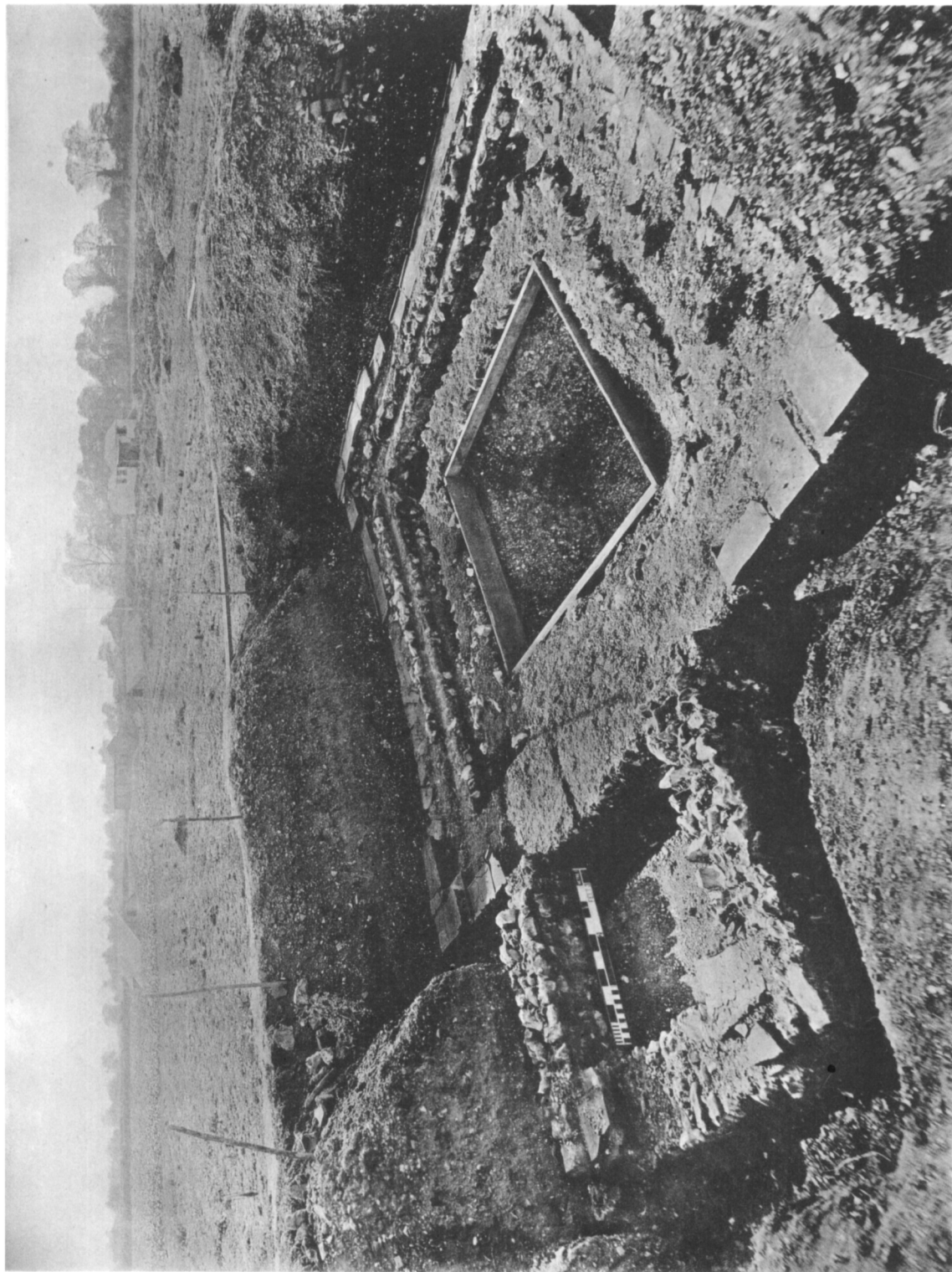
house itself that it has undergone an interesting series of changes. At first it seems to have consisted of the western range only, but was afterwards converted from the corridor to the courtyard type by the addition of the north and east divisions. These are at right angles to one another, whereas the junction of the old and new works make a distinctly obtuse angle. Finally, in order to provide direct access from the street, a new corridor was driven right through the eastern range with a vestibule on the roadway, as previously noted. This corridor makes an acute angle with the line of the older inner corridor.

Immediately to the south of the house just described, and standing as it were in the mouth of its courtyard, was a small rectangular building of unusual character and puzzling construction (Block I.). It measured externally 18 feet by 17 feet, and stood nearly east and west, with a small projection on its eastern side. This projection, which was also rectangular, resembles a porch in plan, with an entrance 4 feet wide. It was $5\frac{1}{2}$ feet wide internally and 4 feet in depth, with walls from 17 to 18 inches thick (Plate XXIX.). The main structure, against which it abutted with straight joints, was of strong construction, with foundations $2\frac{1}{2}$ feet thick of flint rubble with lacing courses of tiles.^a Extending round three sides internally was a square chase 9 inches wide and 11 inches deep forming the socket of a timber frame, which had of course disappeared. On the east side the chase was wanting, and the mortar bed showed that the entrance here was flanked by stone blocks each 30 inches square and 3 feet 8 inches apart. These blocks, the upper surfaces of which would have been level with the threshold, in all probability supported columns. These most likely stood free with side openings. There were no remains of any flooring, but the evidence of the timber joists let into the walls points to the building having been floored with wood. This would seem a form of flooring most unusual for Roman times, but it is difficult to see for what other purpose these massive joists were intended. The area of the floor would have been a square of about $13\frac{1}{2}$ feet.

Within the building under notice, but at a lower level, there were laid bare the foundations of an earlier structure of the same form. It measured internally 7 feet 4 inches by 7 feet 8 inches, with walls of flint rubble varying from 18 inches to 23 inches thick,^b with stone quoins. The floor was of red tile *tesserae*. In excavating the centre in order to ascertain if the building had a crypt, or underground cell, a first brass of Marcus Aurelius was found lying at the floor level. It

^a Many of these were roofing tiles.

^b The north wall was 18 inches thick, the east 20 inches, the south 21 inches, and the west 23 inches.



SILCHESTER.—FOUNDATIONS OF A BUILDING (BLOCK I.) IN INSULA XXIII.

(From a Photograph by Mr. Victor White.)

Published by the Society of Antiquaries.

will be seen from the plan that the later structure is not quite square with the older nor concentric with it.

What could have been the purpose of the building just described? Many detached square chambers of similar size have been met with at Silchester, but

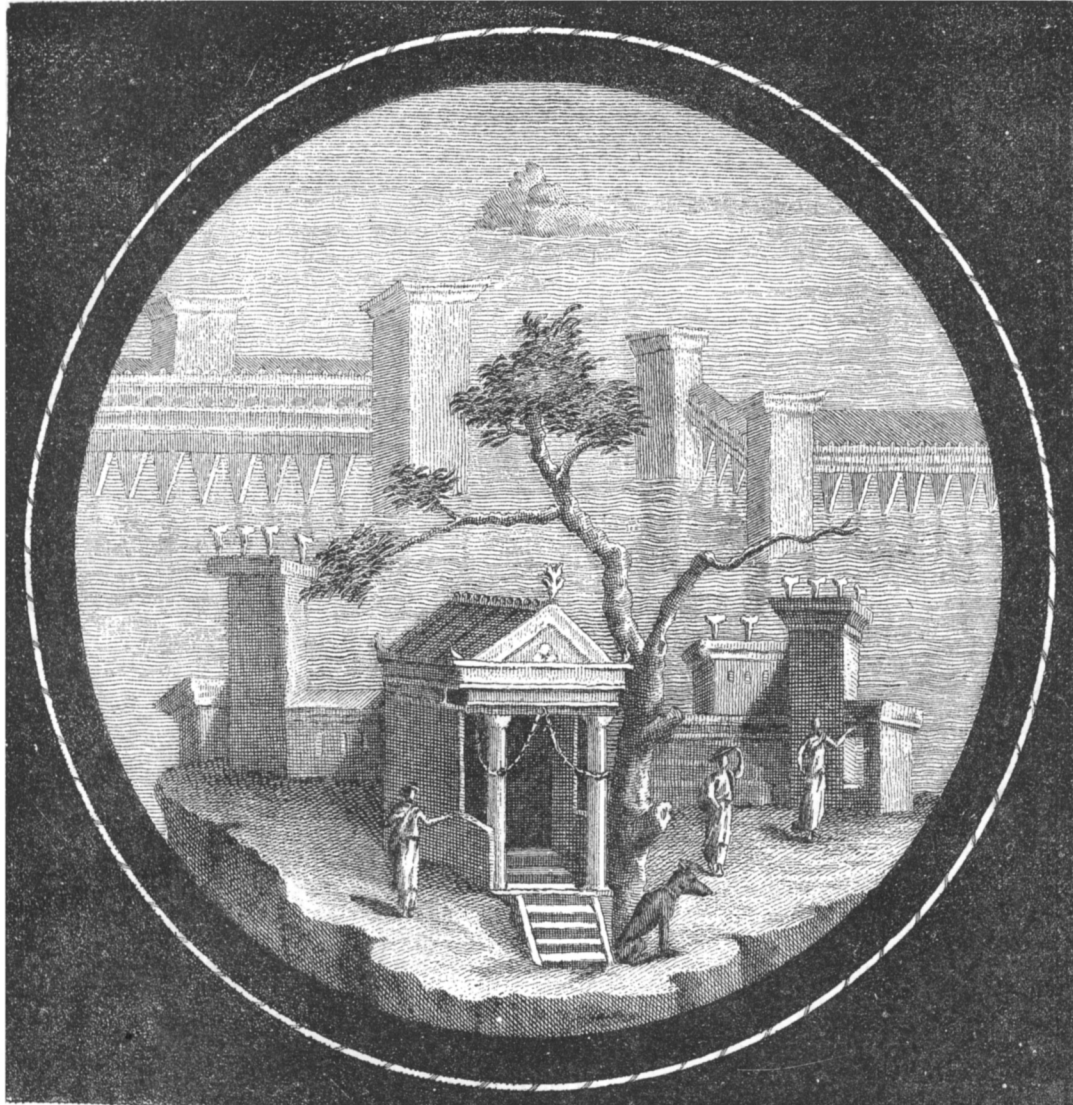


Fig. 2. Wall-painting showing small temple. [From *Le Pitture antiche d'Ercolano* (Naples, 1770), ii. tav. lii.]

none of these has presented the peculiarities of construction seen in that under notice, nor has any been found to enclose an earlier structure of like form. As has been noted, the massive bases in the east wall suggest the use of columns, implying

a certain amount of importance in the building, which was clearly not a mere domestic adjunct to the house close by. In Pompeian and other wall-paintings representing landscapes, small rectangular buildings of a similar character are often shown placed beside roadways and in the vicinity of villas (fig. 2). There can be no question that these structures were frequently of a sacred character, since altars are sometimes associated with them. It therefore seems possible that this small building at Silchester may have belonged to the same class, especially as it was built round and superseded an earlier one on the same site; the motive of course being to continue the sanctity of the place. As for the porch-like construction in front, it is clearly, from the awkward way in which it would have abutted against the columns, an addition to the original building, probably at a time when it had lost its sacred character. The spaces between the columns and the outer angles were no doubt then walled up.

Another point of interest in connection with this building is its relation to the house near which it stood. It will be seen that its axis is parallel with that of the western or older portion of the house, and the fact that it was rebuilt with a different axis from the earlier structure suggests that it and the first house may be contemporary. Possibly the canting of the northern and eastern additions to the house may have been due to a desire to avoid interfering with the structure under notice. Further, this association of a detached shrine with a house finds a parallel in a group of Roman buildings at Les Bossenno, near Carnac, in Brittany, where an undoubted example of a small temple in connection with a farmhouse and baths was excavated by Mr. James Miln in 1875.^a

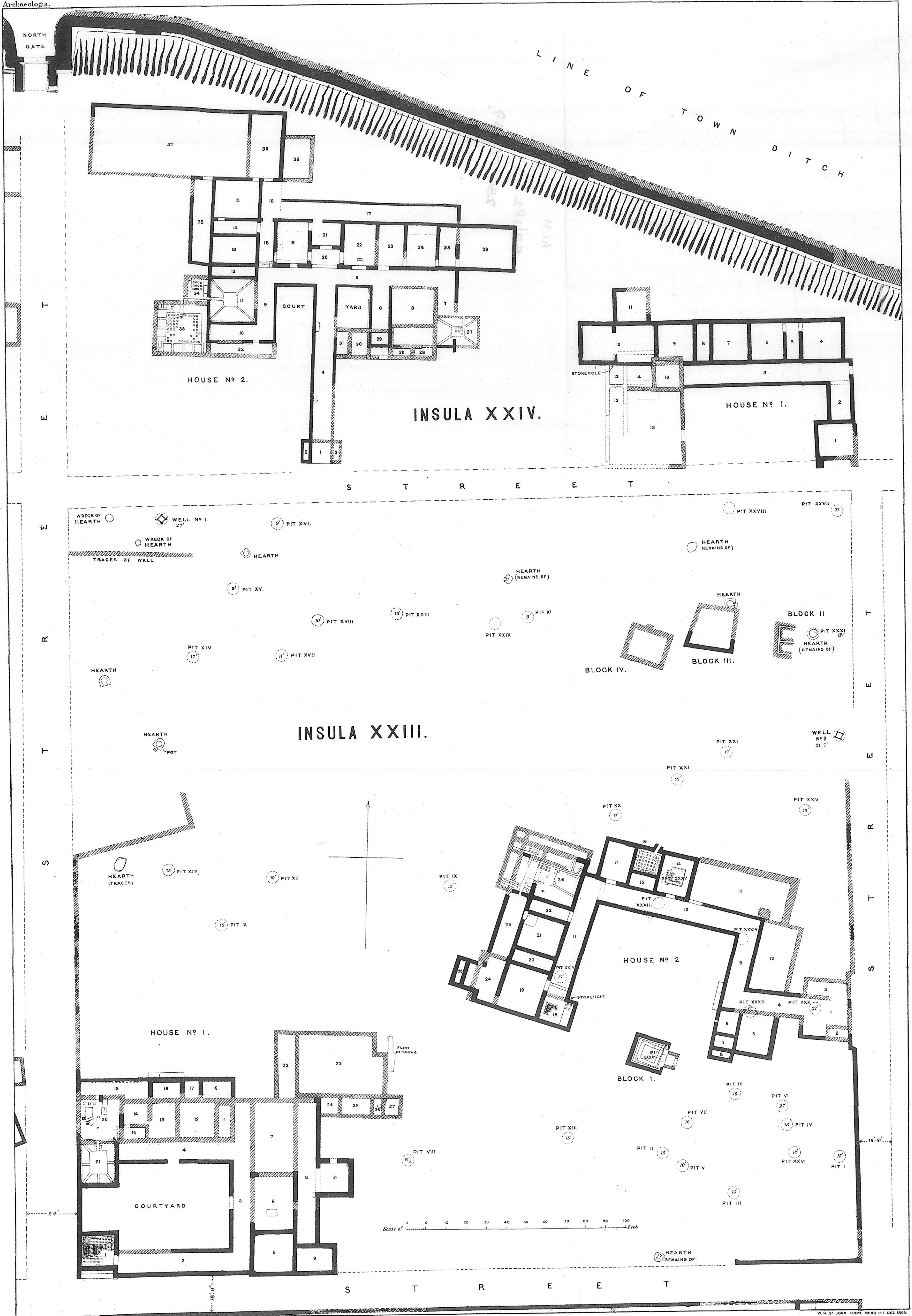
The only other traces of building in *Insula XXIII.* are to be found near the north-east angle, where three small blocks are shown on the plan. The easternmost, Block II., exhibits the ruins of a channeled hypocaust, but its walls have been destroyed and the foundations could not be distinguished from an extensive gravel bed. Only the central block (Block III.)^b retained any fragment of walling, and Block IV. was represented by gravel foundations only.^c Looking to the near parallelism of the hypocaust channels with the eastern side of Block III. and that of Block IV. with the western side of Block III. it is possible that all three structures really formed part of a house which has been otherwise obliterated.

Just to the east of Block II. the remains of a hearth were found at a depth

^a James Miln, *Fouilles faites à Carnac (Morbihan). Les Bossenno et le Mont-Saint-Michel* (Paris, 1877), 134, 135, and accompanying plans.

^b This measured from 17 feet to 20½ feet from east to west and 19 feet from north to south.

^c They measured internally 17 feet by 13½ feet.



SILCHESTER.—PLAN OF INSULÆ XXIII AND XXIV.

of about $3\frac{1}{2}$ feet, through the settling of a pit over which it had been laid. Another hearth adjoined the north side of Block III., and there were traces of yet another further north. About 11 feet south of the same block the greater part of a large pot, at least 18 inches deep and showing strong traces of fire within, was found laid upon its side bedded in clay. It is possible that it had served as a primitive form of oven.^a

Besides the hearths just mentioned the remains, more or less perfect, of eight others were met with. The majority of them were in the north-west corner of the *insula*. The perfect examples were all of the circular type.

The street dividing *Insula* XXIII. from *Insula* XXIV. to the north of it, though strongly marked in the growing crops year after year, has no definite width or boundaries.

The long triangular area north of the street extends from the north gate eastwards along *Insulæ* XXIII. and XXII. The street dividing these *insulæ* did not extend through this area, although a breach in the line of the town wall is at first sight suggestive of a gate to which this street led. But on examination it was proved that no such gate existed.

The area in question, which we have called *Insula* XXIV., contained only a hearth in the portion of it examined in 1899. The part excavated last year, contrary to expectation, contained the foundations of two houses, one being of large size and unusual character, and both set very close to the town wall (Plate XXX.).

The easternmost of these houses, House No. 1, was of the usual corridor type. It stood east and west, and had at the east end a feature not uncommon in these Silchester dwellings, a vestibule (1) and short corridor (2) connecting it with the street. The body of the house consisted of a number of square rooms and intermediate passages (4-8), with a corridor (3) to the south. Nothing remained to show how any of these had been floored, which is all the more singular since the rear walls were standing much higher than they are usually found at Silchester.

The large double room (10) on the west, and another (11) north of it seem to be additional to the original plan. Of the northern chamber nothing can be said, but the double room was paved with coarse red *tesseræ*, and under the western half was a pillared hypocaust with the stoke-hole in its south-east corner. The hypocaust was a fine example, constructed throughout with *pilæ*. The chamber (12), in which was the stoke-hole, together with the corridor (13) south of it, and the

^a For a notice of similar contrivances at Silchester, see the report of the excavations in 1897, in *Archæologia*, lvi. 116, 117.

chamber (14) to the east, formed part of an earlier building, partly overlaid by the western end of the house, under which the plaster floors were found. The older floors were about 14 inches below those of the later structure. Besides these traces of an earlier building, the house shows alterations of a later character, in the form of a square chamber (16) built across the western end of the corridor (3). This chamber intrudes into the rooms (9 and 10) north of it in a way that suggests their previous demolition. A continuation of its south wall westwards is built upon a red mosaic floor of the earlier building, and its east wall runs on as far as the street, along which it returned as if to form a courtyard (15) with the surviving walls of the earlier structure.*

House No. 2 is the most peculiar in plan of any yet found at Calleva. In some respects it is not unlike House No. 1 in *Insula XVI.*, excavated in 1896, but it differs from that in the long passage or gallery connecting it with the street, especially as this formed part of the original plan of the house. The body of the house stood east and west, with a large projection southwards on the east and a transverse wing on the west. It was therefore practically a house of the courtyard type, with the courtyard bisected by the entrance gallery. The house was entered from the street to the south by a square vestibule (1) with small chambers (2 and 3) on either hand. The vestibule was originally paved with red *tesserae*, but these were subsequently replaced by a pavement of *opus sectile*, resembling in character that in the vestibule of House No. 1, *Insula XXIII.* It consisted of a square central panel of octagonal tiles with small diamonds in the interspaces and a triple border of square tiles. This is the second example yet found of this peculiar form of mosaic. The vestibule opened into a gallery or corridor (4) 9 feet wide and 79 feet long, paved throughout with white *tesserae* with red borders. The gallery led into a cross corridor (5), traversing the body of the house. The western half of this corridor had a similar pavement to the entrance gallery, but with broader borders. The eastern half, on the other hand, was floored with red *tesserae* only. From this half two other corridors (6 and 7) led southwards, and with the room or rooms between them formed the south wing of the house. The first or westernmost corridor was floored with white mosaic, with a narrow stripe of red along the edges. The other corridor was paved throughout with red *tesserae*. The space between these corridors seems originally to have

* The following are the dimensions, in feet, of the various parts of the house, as numbered on the plan: (1) $17\frac{1}{4}$ by $16\frac{1}{2}$; (2) $9\frac{1}{2}$ by $18\frac{1}{4}$; (3) 83 by $9\frac{1}{2}$; (4) $18\frac{3}{4}$ square; (5) 6 by $18\frac{3}{4}$; (6) 16 by $18\frac{3}{4}$; (7) $17\frac{1}{4}$ by $18\frac{3}{4}$; (8) $6\frac{1}{4}$ by $18\frac{3}{4}$; (9) 17 by $18\frac{1}{2}$; (10) $35\frac{1}{4}$ by $18\frac{1}{2}$ and $17\frac{3}{4}$; (11) $14\frac{1}{4}$ by $15\frac{1}{4}$; (12) $6\frac{3}{4}$ by $9\frac{3}{4}$; (13) $6\frac{3}{4}$ by 39 (?); (14) $12\frac{1}{2}$ by 11; (15) $26\frac{1}{2}$ by $37\frac{1}{4}$; (16) 11 by 14.

formed a double room (8), which could be amply lighted from the south. The smaller or southern division had a floor of red mosaic, but the larger portion showed traces against the walls of a pavement of white mosaic edged with red, the rest of which had disappeared.

The western half of the main corridor had also a return southward (9), paved in the same way with white mosaic bordered with red. This returned again westwards (10), with a red floor, across the southern end of the western wing.

This wing consisted of three fair-sized rooms (11, 13, and 15), of which the largest was 21 feet square, with intermediate passages (12 and 14). All these divisions of the wing, except the northernmost passage (14), were paved with red mosaic, but in the case of the large southernmost room, the *tesserae* had been laid upon an earlier floor of *opus signinum*, which showed distinct signs of wear. This room was also warmed by a composite hypocaust of the usual character.

The main body of the house consisted of a row of chambers and passages, having the principal corridor on the south, and a second corridor, probably a mere pentice (16 and 17), on the north. The first division towards the west was a passage (18) through the range paved with square tiles; then came a group of four chambers (19—22) communicating with each other, followed by two other rooms (23 and 24), and a second passage (25), with a large chamber beyond (26), which seems to be an early addition to the original plan. The central group of chambers was evidently planned for effect. It consisted, first, of a vestibule (20) opening widely upon the main corridor, exactly opposite the end of the long gallery leading from the street. It was paved with white mosaic, and had doorways on its other three sides into the adjoining chambers. The room on the left (19) had, in addition to the doorway from the vestibule, entrances on the south-west and north-east. Its pavement consisted of an irregular panel of white mosaic set somewhat eccentrically in a red ground. The room to the right of the vestibule had certainly a doorway from the corridor, since the constant tread of feet had worn away the *tesserae* within, which had been replaced by a patch of red tiles. The floor was of white mosaic with, originally, a square central panel of finer work within a frame of red and white. But the finer work had evidently been injured in later times, and as there was no one to repair it properly, it was cleared away and replaced by square tiles. A few small red *tesserae* along one edge alone remained to tell the tale (Plate XXXII.). The remaining chamber of the group, that north of the vestibule, showed no indications whatever of its flooring, which, had it been of mosaic or cement, would certainly have left some trace behind in a house containing such abundant evidence as to its pavements. As we can hardly suppose



SILCHESTER.—MOSAIC PAVEMENT—HOUSE No. 2, ROOM 22, INSULA XXIV.

(From a Photograph by Mr. Victor White.)

it to have been merely of gravel, the only other alternatives are, that it was of tiles or of wood. That wooden floors existed at Silchester has already been shown (i.) by the grooves for joists found on the site of a wooden building in *Insula XVI.* in 1896, and (ii.) by the chases for them in the supposed temple in *Insula XXIII.* If laid on a framework round the walls, as in the case of the latter building, its removal would leave no traces behind. With regard to tile floors, the often insufficient setting would almost be enough to account for the obliteration of such flooring, especially as we know from the plundering of the hypocausts for their *pilæ* that tiles were much sought after in the clearing and levelling which the site of the town has undergone. Brick or stone *tesseræ* were of no use to those seeking building material, but the tiles were serviceable for various purposes, hence the rarity of tile floors on the site.

The remarks just made apply with equal force to the room (23) east of the group described, as well as the quasi-passage (25) and the large chamber (26) terminating the range, in none of which were any traces of flooring.^a The intermediate room (24) was paved with white mosaic, with a broad band of red across the north end.

So far we have been considering the original plan of the house. It remains to say a few words about the additions made to the east and west wings. In the case of the eastern wing a chamber (27) warmed by a composite hypocaust was built out eastwards. Next a narrow strip (28) was added to the south end, probably for a stair to an upper storey, and three small chambers or closets (29-31) inserted between this prolongation and the long gallery. One of these little rooms (29) was intruded into and absorbed the end of the western corridor (7), and perhaps served as a lobby to the stair. It appears to have had an external doorway.

The additions to the western wing consisted (i.) of a narrow strip (32) at the south end, probably, as in the other wing, for a staircase to an upper floor, and (ii.) of two chambers (33 and 34) warmed by composite hypocausts. The larger of these chambers (33) was 24 feet square, being the largest room in the house. Both rooms had no doubt others over them. The northern half of the western wing was covered externally by a corridor or pentice (35). This corridor seems to have originally been of the same length as the wing, but was shortened when the new winter rooms were added.

Overlapping the north end of the western wing was a large enclosure which

^a Also to the chambers in House No. 1 in *Insula XXIV.*, which showed no traces of flooring.

may or may not be part of the original plan. Its east end was cut off and roofed to form a building (36) with a clay floor. The main division (37) seems to have had a shed roof along the north wall, if we may take as evidence thereof the abundant fragments of roofing tiles found throughout its length. Another building (38), perhaps a stable, was afterwards added on the east.^a

It must be noted that, after its interesting plan, the chief feature of the house just described is the number of chambers and corridors which had mosaic pavements. These were composed exclusively, so far as they remained, of *tesserae* of red tile and white chalk. The most noticeable point about the latter is that it is of the soft quality derived from the beds of the upper chalk, and not of the hard variety used for pavements elsewhere. It must therefore have undergone some hardening process, as in its present state it would be impossible to imagine its employment for paving purposes.^b

Not only was this house noticeable for its pavements, but the fragments of coloured plaster showed that at least the chambers warmed by hypocausts had been gaily painted. Brilliant red panels with purple borders seem to have covered the walls, while other fragments showed grounds of gold colour, blue, and green. Other specimens of wall plaster of a drab colour were met with, which appears to have been combed in various directions, possibly with some decorative object.

Passing to the west of the north and south road through the town, it will be seen that the extreme north-west angle is occupied by a small triangular *insula* which has been numbered XXV. The long side is bounded by the town wall and bank; the two other sides by streets. This *insula* contained two buildings only, both abutting on the north and south street. The larger (Block I.) closely adjoined the north gate. It was oblong in plan, about 38 feet

^a The following are the dimensions, in feet, of the various parts of the house, as numbered on the plan: (1) 9 by $10\frac{1}{2}$; (2 and 3) each $2\frac{1}{2}$ by $8\frac{3}{4}$; (4) 9 by 79; (5) $7\frac{3}{4}$ by $97\frac{1}{4}$; (6 and 7) each $8\frac{1}{4}$ by 30; (8) $20\frac{3}{4}$ by 29; (9) $8\frac{1}{4}$ by 29; (10) 23 by $7\frac{3}{4}$; (11) $21\frac{1}{4}$ square; (12) $21\frac{1}{4}$ by $4\frac{1}{2}$; (13) $21\frac{1}{4}$ by $13\frac{1}{4}$; (14) $21\frac{1}{4}$ by $6\frac{1}{2}$; (15) $21\frac{3}{4}$ by 19; (16) $9\frac{1}{2}$ by $18\frac{1}{2}$; (17) 87 by $8\frac{1}{2}$; (18) $6\frac{3}{4}$ by $21\frac{1}{4}$; (19) 15 by $21\frac{1}{4}$; (20) 14 by 8; (21) 14 by $11\frac{1}{2}$; (22) $15\frac{1}{4}$ by $21\frac{1}{4}$; (23) $12\frac{1}{2}$ by $21\frac{1}{4}$; (24) $14\frac{1}{2}$ by $21\frac{1}{4}$; (25) $8\frac{1}{4}$ by $20\frac{1}{2}$; (26) $26\frac{1}{4}$ by $20\frac{1}{2}$; (27) $19\frac{1}{4}$ by $14\frac{1}{2}$; (28) $19\frac{1}{2}$ by $3\frac{1}{2}$; (29) $8\frac{1}{2}$ by 12; (30) $7\frac{1}{2}$ by 12; (31) $5\frac{1}{4}$ by 12; (32) 30 by 5; (33) $24\frac{1}{4}$ by 24; (34) $9\frac{1}{2}$ by $11\frac{1}{4}$; (35) $8\frac{3}{4}$ by 42; (36) 15 by 33; (37) $75\frac{3}{4}$ by 33; (38) $12\frac{3}{4}$ by $20\frac{1}{4}$.

^b A stick of chalk $2\frac{1}{2}$ inches long, and showing a square of $\frac{1}{2}$ inch in section, was found in Pit XXXIII. in *Insula* XXIII. Others very similar, which were discovered by Mr. Joyce, are now in the Silchester Collection at Reading. All were no doubt fragments prepared for cutting up for the smaller *tesserae* of floors such as those described above.

long and 22 feet wide, and had against the south wall the base of one of the long flues associated with dyeworks. Outside the same wall was one of the circular furnaces used in the same industry. Block II. was simply a small rectangular chamber, measuring 25 feet by 18 feet.

Insula XXVI., which lay south of that just described, formed an oblong measuring 395 feet from east to west and 269 feet from north to south. It was bounded on all four sides by streets, except on the north-west, where the town wall cuts off the angle (Plate XXXII.). The street on the north, like its continuation eastwards, was very ill-defined. The north-eastern half of the *insula* was singularly free from buildings; the only trace of such laid bare being the gravel foundation of a small square structure (Block I.) near the angle.^a A little way down the west side and abutting on the street there were the foundations of a small and interesting house, No. 1, consisting of one very large chamber (7), which was probably subdivided by partitions, and five other rooms (1, 3, 4-6), with a corridor of communication (2). Only the corridor and the central room had any traces of flooring, of the usual red tile mosaic.^b

A little further south was a singular circular foundation, about 27 feet in diameter, formed of flint rubble and covered originally by a floor of *opus signinum* (Block II.). Round the margin of its vertical edge was a cutting in the gravel from 9 to 12 inches wide, and filled with earth, as if for the foundations of a timber structure that had enclosed the platform, and outside this again was a bed of clay, as if derived from the filling in of the woodwork. The platform was very nearly a true circle, but on its eastern side a small segment about 8 feet long was cut off and the straight edge faced with tile. Probably the entrance was here. The object of this structure is a mere matter of conjecture. It appears to have been destroyed at an early date and forgotten, for there were subsequently driven through it a pit and the trenches for the gravel foundations of a later structure (Block III.). This was oblong in plan, with one end upon the street, and was subdivided into two divisions.^c

Yet further south and not far from the south-west angle were several patches of drab stone *tesseræ*, including one side of a corridor. These had evidently belonged to a long-destroyed house (No. 2), possibly of some antiquity,

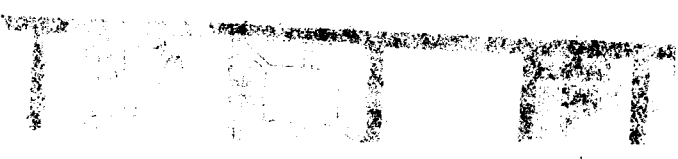
^a Measuring $20\frac{1}{2}$ feet by 23 feet.

^b The following are the dimensions, in feet, of the several parts of the house as numbered on the plan: (1) $13\frac{3}{4}$ by 14; (2) 35 by $7\frac{1}{2}$; (3) 15 square; (4) $19\frac{1}{2}$ by $18\frac{1}{2}$; (5) $15\frac{1}{4}$ by $18\frac{1}{2}$; (6) $20\frac{1}{2}$ by $8\frac{1}{2}$; (7) $29\frac{1}{4}$ by $29\frac{3}{4}$.

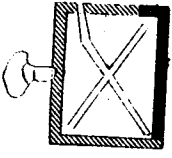
^c It measured 49 feet in length by 20 feet in width.



2



INSULA XII.
(Excavated in 1894)



C. P. KELL & SON, LITH.

since the *tesseræ* were in a very decayed condition. The house evidently lay at an angle with regard to the streets. These remains are conclusive proof that the various *insulæ* must often have contained more buildings than have been revealed by the excavations. In this case a house has entirely disappeared, with the exception of a few remnants of its mosaic pavements. Even more vague traces have occurred from time to time, but too vague to justify their insertion on the plan.

The south-east corner of the *insula* was occupied by a fair-sized house (No. 3). This was partly uncovered by the late Mr. Joyce in 1866, who thus describes it in his paper in *Archæologia* :

"The walls were traceable, though badly built; the rooms which were uncovered were sufficiently marked, but the floors gone except a few patches here and there, just enough to indicate the original level. The examination of this site, though uninteresting, was however pursued with some care, to the extent of laying open an area of 110 feet in length by 36 feet in width. The rooms opened were five in number, one having contained a small hypocaust; they were at the end of a gallery or corridor 90 feet long. A fragment of very poor mosaic was the only trophy discovered here to reward the search. Of this Block IV. a measured plan was made, but it may well be consigned to oblivion."^a

Last year the house was rescued from the oblivion to which Mr. Joyce had consigned it, and with interesting results (Plate XXXII.). Mr. Joyce's plan is not forthcoming, but it seems from his description that he excavated the L-shaped corridor (2 and 3) with the rooms (4-7) on the west, and the small added chamber (12) south of them, which was warmed by a hypocaust. He did not, however, examine the group of rooms (8-11) south of the southern corridor, nor did he find the vestibule (1) upon the street. The corridors had been floored with drab *tesseræ*, and the largest of the western chambers (6) was paved with a mixture of drab stone and red tile *tesseræ*. The southern wing was too ruined to enable much to be made out. The easternmost division (9) had part of a pavement of drab mosaic bordered with red, and one or other of the small rooms south of it had a hypocaust. The vestibule (1) is clearly a later addition to the original plan, in order to form a proper entrance from the street.^b This peculiarity is one that we hope to deal with at length on a future occasion.

^a *Archæologia*, xlv. 330.

^b The following are the dimensions, in feet, of the various parts of the house, as numbered on the plan: (1) 12 by 11½; (2) 80½ by 7¾; (3) 64 by 8; (4) 19½ by 23½; (5) 19½ by 19¾; (6) 19½ by 21¾; (7) 19¼ by 8¾; (8) 26½ by 31¼; (9) 20½ by 27¾; (10) 12¼ by 7½; (11) 11 by 7½; (12) 12 by 9.

Having now described the traces of buildings within the *insula*, we may proceed to the consideration of the wells and pits and the antiquities found in them and about the houses.

Of wells only three were met with: two in *Insula XXIII.* and one in *Insula XXVI.* All had the usual timber framing towards the bottom.

Of pits a considerable number were found in *Insula XXIII.*, but none in *Insula XXIV.*, and hardly any in *Insula XXV.* and *XXVI.* Perhaps the most interesting point in connexion with them was a discovery made in Pit XXVII. in the north-east angle of *Insula XXIII.* At about 16 feet from the surface two upright pieces of timber, about 20 inches apart, gradually disclosed themselves in the centre of the sand which filled the lower part of the pit. Further excavation showed that they belonged to a piece of a ladder which rested on the bottom of the pit. This was 22 feet deep, and what remained of the ladder was 6 feet $4\frac{1}{2}$ inches long. It seems therefore that we have here a case where a pit was in course of formation, perhaps for a well, but the sides had collapsed and buried the ladder, in the absence of the well-sinker, since we found no remains of him, and on his return he was only able to extricate the upper portion of his ladder. The sides of the ladder measured 3 inches by 2 inches in section, and were apparently of fir, but the rungs were of oak. Of these five remained, two perfect and three broken, and 14 inches apart. They were 1 inch thick and 2 inches deep, and projected 2 inches beyond the sides, being kept in place by wooden wedges. The second stave was a round one, 1 inch in diameter. The total width of the ladder was 22 inches at the bottom or 18 inches in the clear, but at the top of the fragment it was $19\frac{1}{2}$ inches. As this would narrow a 24-foot ladder to about 10 inches at the top, or 6 inches in the clear, it is probable that the broken ends have been brought nearer by pressure.

Pit I. in the south-east corner of the same *insula* seems to have been sunk through a layer of building rubbish and decayed plaster, perhaps indications of some house on the spot.

Pit X. yielded at a depth of 7 feet a bronze *patera* of a well-known form, but without any ornament on the flat handle. The maker's stamp is . AVI . . . The body of it unfortunately fell to pieces from decay. Seven feet lower down were a number of metal bosses and hinges (fig. 3). The bosses were seven in number, $1\frac{1}{8}$ inch in diameter, and consisted of gadrooned rings with plain central nail-head rivets. The hinges were of two kinds: the first, of which there were four perfect examples and seven halves, were $\frac{1}{8}$ inch wide and $2\frac{1}{4}$ inches long, with scrollwork ends, each

pierced by five rivets. The second kind, of which there were two, and half another, were quite plain, and only $\frac{9}{16}$ inch broad; the ends were unequal in length and each pierced by two rivets in line. Both rosettes and hinges appear to have been attached to leather work, traces of which still remain. As to their purpose, it is impossible to speak with certainty. They closely resemble, however, a slightly larger series of similar ornamental hinges belonging to the remains of a suit of splint armour found lately in the Roman station of *Carnuntum* in Austria.^a But the Silchester examples are apparently too slight to have been used in this manner. As to the metal of which they are composed we are indebted to Mr. W. Gowland for the following note :

The rich golden colour of these rosettes and their extreme thinness is very remarkable, so much so, that I have undertaken the analysis of one of them and its central stud. The results of my analysis are as follows :

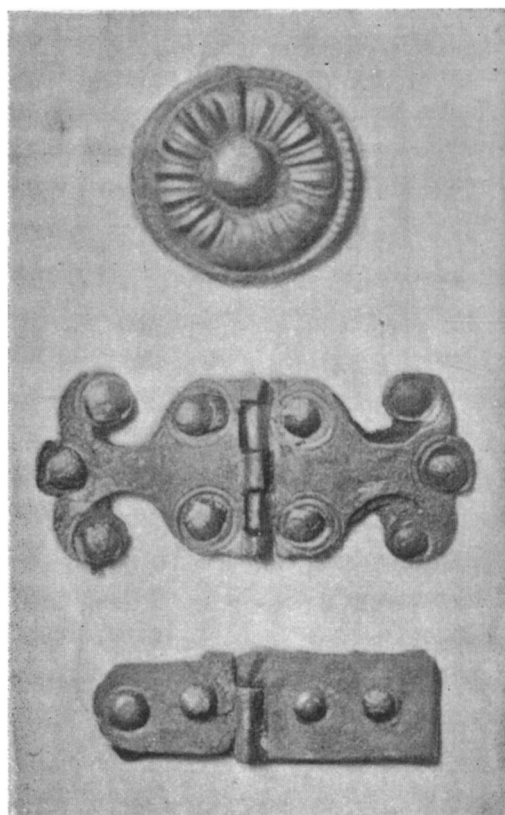


Fig. 3. Brass boss and hinges found in *Insula* XXIII. †

BRASS ROSETTE.				BRASS STUD.	
Copper	.	.	80·42 per cent.	82·31 per cent.	
Zinc	.	.	18·77 „	17·11 „	
Lead	.	.	·09 „	·08 „	
Iron	.	.	·62 „	·45 „	
Silver	.	.	trace „	trace „	
Nickel and Cobalt	.	nil	„	nil	„
Tin	.	.	nil „	nil	„
			<u>99·90</u> „	<u>99·95</u> „	

Both the rosette and stud are of practically the same alloy. Now, of all the copper-zinc alloys, those which contain from 15 to 20 per cent. of zinc possess the greatest ductility.

^a See *Der Römische Limes in Österreich*, Heft ii. cols. 85-109, and Tafs. xvii.-xix.

This Roman brass^a is therefore one of the most ductile of the whole series of brasses. It is, besides, identical in composition with Tournay's alloy (copper 82·5 per cent., zinc 17·5 per cent.), which, on account of this property and its rich colour, is used for the manufacture of all French jewellery made from thin sheets in imitation of gold. Hence the brass of which the rosettes are made is notably of the composition which is best fitted for making such ornaments, and is that which would be employed at the present day. Another example is thus added to those already furnished by the excavations of the advanced stage the Romans had reached in their knowledge of metals and alloys and of their applications to suitable uses.

It is unnecessary to enumerate in detail the antiquities found in the various pits, but it may be pointed out that Pit XIV. yielded at various depths from 9 to 17 feet a fine two-handled globular vessel of white clay and twelve other vessels of various sizes and shapes. Pit XXX. also contained, at a depth of 22 feet, two jugs and five other pots, all in a perfect state. In neither case were the pots deposited in any definite order.

The two wells met with in *Insula* XXIII. were both productive. No. 1, near the north-west angle, was 27 feet deep and lined with 14 feet of timbering. At a depth of 16 feet it contained a bronze bucket with rounded bottom, about 10 inches in diameter, and $7\frac{1}{2}$ inches deep, wrought out of a single piece of metal; it originally had an iron handle. The numerous patches and mendings show that this vessel was a long time in use.

Well No. 2 was 21 feet 7 inches deep and lined with 12 feet of square timber framing. The upper part of this for 7 feet downwards was entirely blocked by a mass of ironwork. This rested on a deposit of black ash, which filled the

^a As is well known, the Romans were not acquainted with the metal zinc. They had, however, discovered that by melting copper together with a certain ore (calamine, zinc carbonate) a yellow alloy, brass, was obtained. The method employed by them in making this alloy from copper and calamine was a very simple one. It was, too, so effective that until a comparatively recent period all brass was made by the ancient process. It was conducted as follows. The calamine was ground and mixed in suitable proportions with charcoal and copper in granules or small fragments. This mixture was placed in a crucible, and was very carefully heated for some time to a temperature sufficient to reduce the zinc in the ore to the metallic state, but not to melt the copper. The zinc being volatile its vapour permeated the fragments of copper converting them into brass. The temperature was then raised, when the brass melted and was poured out of the crucible into moulds.

The discovery of brass probably originated in the smelting of copper ore containing zinc ore. It was not, however, prepared in this way, in somewhat later times, but as I have just described. This is proved by the small amounts of impurities which are present in the specimens of Roman brass which have been analysed.—W. G.

remaining 5 feet to the bottom of the well. The mass of ironwork, after much patient disentanglement, resolved itself into another great hoard of tools, etc., like that discovered in 1890 in *Insula I*. The collection is divisible into two classes: (1) a fairly complete set of smith's tools, and (2) articles forming his stock in trade. The tools include two striking hammers, ten small hammers of various sizes and shapes, two pairs of smith's tongs of different types, two sates, a drift, a small chisel, one pair of wringers or hand levers, two pairs of dividers or compasses, and two instruments for making nails; also four rough iron bars. Besides the smith's tools, there are others which were evidently made by him for sale. These include an axehead, three socketed chisels, an adze, and a centre-bit, such as are used by carpenters; a shoemaker's hobbing-foot or anvil; three plough coulter of different lengths, a cotter, two forks (?), and eight mower's anvils, of which two are unfinished. There are also a number of miscellaneous things, such as knives and choppers, bucket handles, shoes for staves or poles, two files, two saws or paring-knives (?), a long spearhead, a pocket-knife, a hooked object of uncertain use (fig. 4), the worn strapwork of a great pair of doors, which must have been $3\frac{1}{2}$ inches thick, and a huge padlock, $20\frac{3}{4}$ inches long, of a well-known type (fig. 5), also part of another, and a lock spring partly embedded in a piece of half-fused copper, the remains of one or more can-hooks, and pieces of chain of various patterns. There are also four copper or

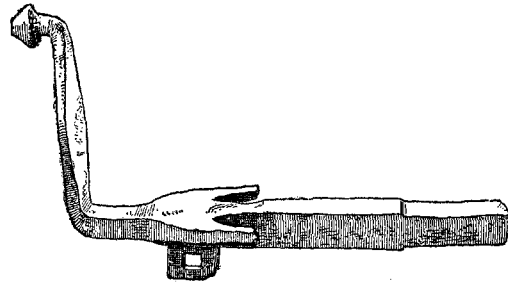


Fig. 4. Iron object of uncertain use ($\frac{1}{4}$ linear).

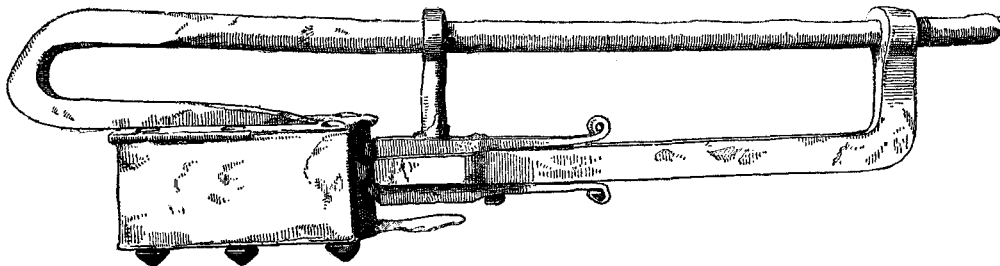


Fig. 5. Large padlock ($\frac{1}{4}$ linear).

bronze cooking pans, a bronze steelyard weight in form of a bust, from which the lead has been melted out, and two vessels of pottery, one a jug, the other a small bowl, and both entire.

Most of the iron articles closely resemble those found in 1890 and described and figured in Sir John Evans's paper in *Archaeologia*, vol. liv., but one object is

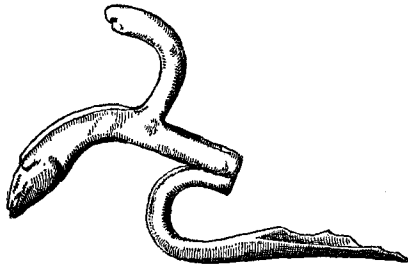


Fig. 6. Farrier's tool found at Silchester ($\frac{1}{4}$ linear).

distinctly novel on the site (fig. 6). This is a handle $4\frac{3}{4}$ inches long, straight for half its length, and for the rest with a bold downward curve resembling somewhat the butt of a pistol. It here becomes much larger, though still preserving its square section, and terminates in the roughly-wrought head of an eagle, which seems to have held some object, perhaps a ball, in its beak; this is now broken off. At a distance of $1\frac{7}{8}$ inch from the foremost end, of the same thickness as

the handle, is a bar projecting upwards and bent backwards, so as to afford, with the thick curved part of the handle, a very firm grip. Welded beneath the foremost part of the handle is a rod of iron, square in section, curving backwards for $1\frac{1}{2}$ inch and then forwards and upwards at an angle with the straight handle above. This rod expands with a gouge-shaped form for 3 inches, when it is broken off, the width where broken being $\frac{3}{4}$ inch.

Two if not more instruments with which this object has a strong general resemblance have been found in France.^a The handle of a third is figured by Caylus, *Recueil d'Antiquités*;^b but another, from Pompeii, preserved in the Museum at Naples, to which the Silchester example is equally like in principle, has the advantage of revealing the use of such instruments by means of the ornamentation

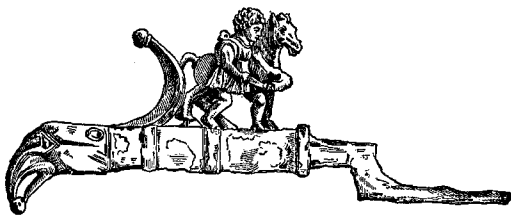


Fig. 7. Farrier's tool found in Pompeii ($\frac{1}{4}$ linear).^c

upon it (fig. 7). The handle is of bronze, with the same curved bar rising from its upper surface as in the Silchester example, but between the bar and the foremost end of the handle is a group of a horse and man. The man is close against the horse, stooping slightly and with the right fore-foot of the horse upon his knee. He

appears to be holding the hoof with his left hand and applying some instrument to it with his right, which instrument it is a fair assumption is intended for one of the same sort as that of which this group is an ornament. The instrument,

^a One is preserved in the Museum of Bar-le-Duc, the other in the Museum of Grenoble.

^b T. iv. pl. 84.

^c From *Revue Archéologique*, N.S. xxxii.

and all others in principle like it, may therefore be considered to have to do with farriery. Furthermore, in an exhaustive paper on the subject in the *Revue Archéologique*,^a M. Charles Robert shows the strong points of likeness between the ancient objects cited and a well-known instrument used by farriers, called in France a *boutoir*, for operating in different ways on the hoofs of horses. Looking



Fig. 8. Bronze statuette (front and back views) found in House No. II., *Insula XXIII*. (full size).

therefore to the evidence on the subject we may be justified in concluding that the smith to whom these iron objects belonged sometimes practised the art of farriery.

The total number of pieces in the hoard is over 100; it thus considerably

^a N. S. (1876) xxxii. 17.

exceeded the 66 pieces of the 1890 find. Although there are many duplicates and the two hoards have much in common, there are interesting differences of detail, while the great padlock and the farrier's implement have not been found before on the site.^a

Among the miscellaneous finds several small objects may be noticed, and first, on account of its rarity at Silchester, a terra-cotta lamp. The bronze articles include two wheel-shaped and two enamelled brooches, and others of the bow form; the enamelled lid of a little pear-shaped box; a small plaque of bronze inlaid with a slice of figured glass; a large bronze ring with paste gem; the gilt bezel of another ring, also with a paste gem; and a red carnelian gem with a figure bearing some object, also from a ring; an elaborate key handle; a little toy axe; a weight; a bell; and the usual array of tweezers, pins, *spatulæ*, spoons, etc. Also a well-modelled nude figure of a Venus, with the feet broken off, now 3 inches high, and a rude image of a fully-draped female figure with large collar and high fluted crown, holding a pipe with keys (fig. 8). This figure, which is $4\frac{7}{8}$ inches high, is barbarous in character and rude in execution. It was found in House No. 2, *Insula XXIII.*, on the floor of one of the corridors.

The iron objects comprise a variety of keys, tools, bow-shaped brooches, bucket handles, *styli*, pieces of chain, a javelin head, a quadruple candlestick and a wall sconce, the hinge and straps of a folding door, etc.

Objects in bone were comparatively few. They include among a number of counters one inscribed PRIMVS.

The glass does not call for special remark, but a piece of a millefiore bowl is of interest as showing through partial decay the mode of manufacture. A similar piece was found in 1899.

Of objects of natural origin there are a flat ovoid amethyst bead, a small disc of bloodstone, two broken palettes of hard black stone, part of a thin slab of porphyry, and, in addition to several pieces of Purbeck marble, fragments of four foreign marbles. One of these is a thin square plaque scored with a geometrical diagram.

The coins, although as numerous as usual, do not include any that need be noted.

Finally, in the class of pottery, attention may be called to the unusual quantity of whole or nearly perfect vessels recovered from the pits and trenches, numbering in all about one hundred and thirty.

^a We are indebted to Mr. Henry Longden for much practical information about the articles in the hoard.

In conclusion, it will be seen that the work carried out during this eleventh year of the existence of the Silchester Excavation Fund was quite as satisfactory as that of former years. The addition made to the plan is an important one, and the great find of pottery and ironwork will make a substantial augmentation to the ever-growing collection in the Reading Museum.

Seven-tenths of the site have now been explored and planned, and we hope we may now look forward with confidence to receiving sufficient support to carry this long work to an end.

The accompanying block-plan (fig. 9) shows the progress made in the exploration of the town.

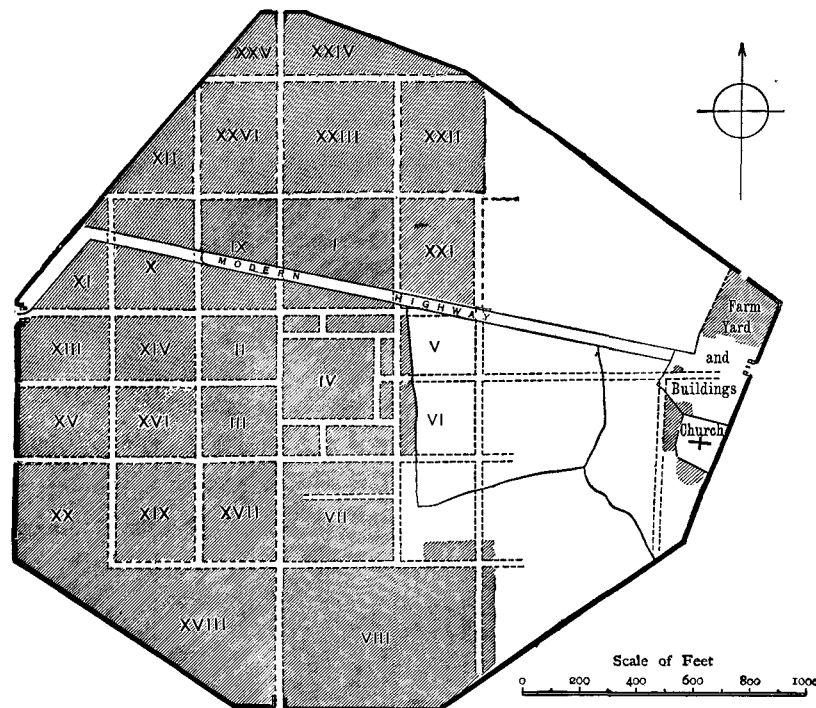


Fig. 9. Block-plan of Silchester, showing portions excavated down to the end of 1900.

Notes on the Plant-Remains of Roman Silchester. By CLEMENT REID, F.R.S.

DURING the last two years I have had the opportunity of examining the plant-remains found from time to time in the old wells and rubbish pits of Roman Silchester. These have been most carefully collected by Mr. A. H. Lyell, who has also undertaken the very laborious work of washing the material and picking out the seeds and small bones that it contains. I have also examined the few specimens previously deposited in the Reading Museum, and from these sources I am able to compile the list given below.

While leaving to those who conducted the excavations any discussion of the connexion of the old filled-up wells with the adjoining houses, I think that attention should be drawn to certain peculiarities in the plants at different spots, for these may throw light on the nature of the surroundings, and perhaps may suggest the status of the householder. One pit will contain only weeds of cultivation or seeds picked out in cleaning the corn; another will be full of kitchen waste, such as fragments of charcoal and plum and cherry stones. Pit XVII. of 1900 in *Insula XXIII.* is of especial interest; for it is full of cultivated plants, and it is the only pit that has yet yielded seeds of grape or fig. I suspect, however, from their great rarity that the seeds of fig and grape represent only imported dried fruits. This may also be the case with the large plum, the stones of which are much less common than those of the bullace and damson. Pit XXVII. of 1900, which yields a considerably longer list of plants, contains no species used for food, except the blackberry, coriander, and perhaps the elder and good-King-Henry. Well No. 1, *Insula XXVI.*, not otherwise of great interest, yields the edible frog, as determined by my colleague, Mr. E. T. Newton.

The list of nearly a hundred species is too small to allow us to draw conclusions as to the cultivation around Silchester during the period of the Roman occupation. No trace has yet been found of any dye-plants; but no argument can be founded on their absence, for they would be grown outside the town, and only leaves of woad or roots of madder would be brought in, or perhaps still further prepared dyeing material. Cereals are only represented by two grains of wheat, as to which Mr. Carruthers writes: "One of the seeds is small, like some found in granaries dug out of the chalk and sent to me by General Pitt-Rivers."

Edible fruits are fairly numerous, though there is a singular absence of the more valuable kinds. We now have found grape (very rare), sloe, bullace, damson, larger plum, gean cherry, raspberry (very rare), blackberry (very abundant), strawberry (rare), hip, apple, haw (rare), elder, fig (very rare), nut.

Vegetables and pot-herbs are not plentiful, and some of those found, such as the celery, may be wild plants. If we include all plants that are used in this way, we have only celery, coriander, corn salad, and good-King-Henry. A doubtful capsule of flax completes the list of economic species. Weeds of cultivation, however, are plentiful, probably at least a dozen of the species coming under that head. The abundance of seeds of such a plant as the corn-cockle, which is much commoner than corn, suggests that the wheat may have been cleaned in the town before grinding, and the waste thrown into these pits.

Poisonous plants are rather more abundant than one would expect. Seeds of the deadly nightshade occur in many of the pits, and this is not a plant that would be allowed to grow freely in a town where there were many children. The woody nightshade and hemlock are more rare. Trees, except oak, elder, apple, and the plums, have left little trace. Probably all near the town had been used for fuel, which at the time the pits were in use seems to have consisted mainly of well-burnt oak-charcoal. Split oak was also used for the buckets and square linings of the wells. The wood of the old wine casks used for lining some of the wells has been determined by Professor Marshall Ward to be silver fir. The casks were probably imported from the region of the Pyrenees, perhaps filled with wine, perhaps used as crates to contain the Samian ware. With the packing of the Samian ware must have been brought numerous seeds, and to this mode of transportation may be due the appearance of various plants unknown in deposits older than the Roman period.

The occurrence of numerous marsh plants on so dry a site as Silchester is a surprising feature not at first easy to explain, for there is no suitable habitat for these plants within a considerable distance. We find meadow-rue, three marsh buttercups, marsh marigold, ragged robin, meadow-sweet, hemlock, water dropwort, cat's valerian, bur-marigold, marsh sowthistle, gipsywort, water-pepper, alder (one cone), and several sedges. These are all tall riverside plants, floating or submerged species and small marsh plants being missing, except for one seed of water chickweed and three or four of white-rot. The clue to the puzzle is, I think, given by the most abundant sedge (*Carex riparia*), a tall riverside species, which grows in dense masses, and is often used for thatching. Amongst this sedge all the above-mentioned plants commonly grow. The river-

side plants so common in the pits are not likely to have been brought as fodder, for they are rejected by cattle; or as bedding, for it seems strange that they should take the trouble to bring marsh plants from a distance, when much of the surrounding country was probably covered with bracken. The absence of oats and other fodder tells also against the theory of bedding. Perhaps, though the houses may have been roofed with better material, there may have been "lean-to" thatched sheds or perhaps thatched pent-houses over the wells; there would also probably be a shed of some sort for the slave who tended the furnace.

The use of corn in the town accounts probably for twenty plants in our list; the use of thatch for another twenty; a dozen are edible; the rest, except the woods, are weeds of stony ground such as that on which Silchester was built.

- Thalictrum flavum*, *L.* (Meadow-rue).
- Ranunculus sceleratus*, *L.*
 - „ *Flammula*, *L.* (Lesser Spearwort).
 - „ *Lingua*, *L.* (Spearwort).
 - „ *repens*, *L.* (Buttercup).
 - „ *Sardous*, *Crantz.*
 - „ „ var. without tubercles.
 - „ *parviflorus*, *L.*
 - „ *Caltha palustris*, *L.* (Marsh Marigold).
- Papaver Rhoeas*, *L.* (Poppy).
- „ *Argemone*, *L.* (Poppy).
- Fumaria officinalis*, *L.* (Fumitory).
- Brassica alba*, *Boiss.* (White Mustard).
- Senebiera Coronopus*, *Poir.*
- Thlaspi arvense*, *Linn.*
- Viola* (Violet).
- Lychnis alba*, *Mill.* (White Champion).
- „ *Flos-cuculi*, *Linn.* (Ragged Robin).
- „ *Githago*, *Lam.* (Corn-cockle).
- Stellaria media*, *Cyr.* (Chickweed).
- „ *graminea*, *L.* (Lesser Stitchwort).
- Spergula arvensis*, *L.* (Spurrey).
- Montia fontana*, *L.* (Water Chickweed).
- Hypericum perforatum*, *L.* (St. John's Wort).
- Malva sylvestris*, *L.* (Mallow).
- „ *rotundifolia*, *L.* (Mallow).
- Linum usitatissimum* (?), *L.* (Flax).
- Vitis vinifera*, *L.* (Grape).

- Prunus spinosa*, *L.* (Sloe).
 „ *insititia*, *L.* (Bullace).
 „ *domestica*, *L.* (Damson).
 „ „ (large Plum, or Prune).
 „ *lusitanica* (?), *L.* (Portugal-laurel) (?).
 „ *Avium*, *L.* (Gean Cherry).
Spiræa Ulmaria, *L.* (Meadow-sweet).
Rubus Idæus, *L.* (Raspberry).
 „ *fruticosus*, *L.* (Blackberry).
Fragaris vesca, *L.* (Strawberry).
Potentilla Tormentilla, *Neck.* (Tormentil).
Alchemilla arvensis, *Lam.* (Lady's Mantle).
Rosa canina, *L.* (Dog Rose).
Pyrus Malus, *L.* (Apple).
Cratægus Oxyacantha, *L.* (Hawthorn).
Bryonia dioica, *L.* (White Bryony).
Hydrocotyle vulgaris, *L.* (Penny-wort).
Conium maculatum, *L.* (Hemlock).
Apium graveolens, *L.* (Celery).
Conopodium denudatum, *Kock* (Pig-nut).
Coriandrum sativum, *L.* (Coriander).^a
Oenanthe Lachenalii, *Gmel.* (Water Dropwort).
Æthusa Cynapium, *L.* (Fool's Parsley)
Peucedanum sativum, *Benth.* (Wild Parsnip).
Heracleum Sphondylium, *L.* (Hogweed).
Sambucus nigra, *L.* (Elder).^b
Galium (Bedstraw).
Valeriana officinalis, *L.* (Cat's Valerian).
Valerianella dentata, *Poll.* (Corn Salad).
Bidens tripartita, *L.* (Bur Marigold).
Chrysanthemum Leucanthemum, *L.* (Oxeye).
Arctium Lappa, *L.* (Burdock).
Carduus nutans, *L.* (Thistle).
Cnicus lanceolatus, *Hoffm.* (Thistle).
Leontodon hispidus, *L.* (Hawkbit).
Sonchus oleraceus, *L.* (Sowthistle).
 „ *plaustris*, *L.*
Anagallis arvensis, *L.* (Pimpernel).

^a The coriander was formerly much cultivated. It is not found wild in Britain.

^b Seeds of elder are so abundant in several of the pits, and are so often found crushed, as to suggest that elderberries may have been extensively eaten or used for wine in *Calleva*.

- Solanum Dulcamara*, *L.* (Woody Nightshade).
Atropa Belladonna, *L.* (Deadly Nightshade).
Veronica hederæfolia, *L.* (from a trench of doubtful age).
Mentha aquatica, *L.* (Mint).
Lycopus europæus, *L.* (Gipsywort).
Prunella vulgaris, *L.* (Self-heal).
Stachys arvensis, *L.*
Galeopsis Tetrahit, *L.* (Hemp-nettle).
Lamium purpureum, *L.* (Purple Dead-nettle).
Ballota nigra, *L.* (Black Horehound).
Plantago lanceolata, *L.* (Ribwort).
Chenopodium Bonus-Henricus, *L.* (Good-King-Henry).
Atriplex patula, *L.* (Orache).
Polygonum Aviculare, *L.* (Knot-grass).
 ,, *Hydropiper*, *L.* (Water-pepper).
 ,, *Persicaria*, *L.* (Persicaria).
Rumex conglomeratus, *Murr.* }
 ,, *obtusifolius*, *L.* } (Docks).
 ,, *crispus*, *L.* }
Urtica dioica, *L.* (Stinging Nettle).
Ficus Carica, *L.* (Fig).
Alnus glutinosa, *L.* (Alder).
Corylus Avellana, *L.* (Hazel).
Quercus Robur, *L.* (Oak).
Abies pectinata, *L.* (Silver Fir), casks only, probably foreign.
Eleocharis acicularis, *Sm.* }
 ,, *palustris*, *R. Br.* }
Carex riparia, *Curtis* } (Sedges).
 ,, *canescens* (?), *L.* }
 ,, 2 sp. }
Triticum sativum, *L.* (Wheat).
Pteris aquilina, *L.* (Bracken).